AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in this application:

LISTING OF CLAIMS:

Claims 1 to 10. (Canceled).

11. (Currently Amended) A magneto-resistive layer system comprising:

a magneto-resistive layer stack; and

at least one layer arrangement situated in an environment of the magneto-resistive layer stack working on the basis of one of a GMR effect and an AMR effect, which generates a resulting magnetic field acting upon the magneto-resistive layer stack, the layer arrangement including a first magnetic layer, a second magnetic layer, and a non-magnetic intermediate layer separating the first magnetic layer and the second magnetic layer from one another, the first magnetic layer and the second magnetic layer being ferromagnetically exchange-coupled via the intermediate layer;

wherein one of: (a) the first magnetic layer is a magnetically soft layer, made of one of permalloy, CoFe, Co and magnetic alloys containing these materials, and the second magnetic layer is a magnetically hard layer, made of one of CoSm and Cr, and (b) the first magnetic layer is a magnetically hard layer, made of one of CoSm and Cr, and the second magnetic layer is a magnetically soft layer, made of one of permalloy, CoFe, Co and magnetic alloys containing these materials.

Claim 12. (Canceled).

13. (Currently Amended) The magneto-resistive layer system according to claim 11, wherein each of the first magnetic layer and the second magnetic layer is a magnetically hard layer, made of one of ~~CoSm, CoCrPt, CoCrTa, Cr and CoPt~~ CoSm and Cr.

14. (Previously Presented) The magneto-resistive layer system according to claim 11, wherein the first magnetic layer has a different thickness than the second magnetic layer.

15. (Currently Amended) The magneto-resistive layer system according to claim 11, wherein the magneto-resistive layer stack has a third magnetic layer and a fourth magnetic layer which are separated from one another by a second non-magnetic intermediate layer, and the non-magnetic intermediate layer of the layer arrangement and the second non-magnetic intermediate layer of the magneto-resistive layer stack at least one of (a) are at least substantially made of the same material and (b) have a substantially equal thickness.

16. (Currently Amended) The magneto-resistive layer system according to claim 11, wherein the non-magnetic intermediate layer is made of at least one of (a) copper, (b) ~~and~~ an alloy one of including and made of copper, (c) silver and gold, and (d) ruthenium.

17. (Currently Amended) The magneto-resistive layer system according to claim 11, wherein the layer arrangement is situated at least one of (a) on top of, (b) underneath and (c) next to the magneto-resistive layer stack.

18. (Previously Presented) The magneto-resistive layer system according to claim 11, wherein at least one of the first magnetic layer and the second magnetic layer has a thickness between 10 nm and 100 nm.

19. (Previously Presented) The magneto-resistive layer system according to claim 18, wherein the thickness is between 20 nm and 50 nm.

20. (Previously Presented) The magneto-resistive layer system according to claim 11, wherein, in response to a change in a temperature to which the magneto-resistive layer system is exposed, one of a changing sensitivity and a shifting working point of the magneto-resistive layer stack with respect to an external magnetic field to be measured with respect to at least one of strength and direction, is at least partially compensated within a predefined temperature interval by the resulting magnetic field generated by the layer arrangement, which also changes as a result of the temperature change.

21. (Previously Presented) The magneto-resistive layer system according to claim 20, wherein the compensation is performed completely and the temperature interval is -30°C to +200°C.

22. (Currently Amended) A sensor element comprising a magneto-resistive layer system, the magneto-resistive layer system including:

a magneto-resistive layer stack; and

at least one layer arrangement situated in an environment of the magneto-resistive layer stack working on the basis of one of a GMR effect and an AMR effect, which generates a resulting magnetic field acting upon the magneto-resistive layer stack, the layer arrangement including a first magnetic layer, a second magnetic layer, and a non-magnetic intermediate layer separating the first magnetic layer and the second magnetic layer from one another, the first magnetic layer and the second magnetic layer being ferromagnetically exchange-coupled via the intermediate layer;

wherein one of: (a) the first magnetic layer is a magnetically soft layer, made of one of permalloy, CoFe, Co and magnetic alloys containing these materials, and the second magnetic layer is a magnetically hard layer, made of one of CoSm and Cr, and (b) the first magnetic layer is a magnetically hard layer, made of one of CoSm and Cr, and the second magnetic layer is a magnetically soft layer, made of one of permalloy, CoFe, Co and magnetic alloys containing these materials.

23. (Previously Presented) The sensor element according to claim 22, wherein the sensor element is for detecting magnetic fields with respect to at least one of strength and direction.